

HiPerFET™ Power MOSFETs

IXFH/IXFT/IXFX14 N100
IXFH/IXFT/IXFX15 N100

N-Channel Enhancement Mode
High dv/dt, Low t_{rr} , HDMOS™ Family

V_{DSS}	I_{D25}	$R_{DS(on)}$
1000 V	14 A	0.75 Ω
1000 V	15 A	0.70 Ω
$t_{rr} \leq 200$ ns		

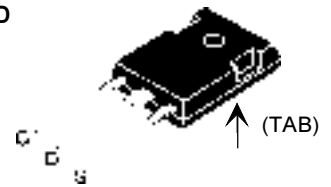
Preliminary data sheet



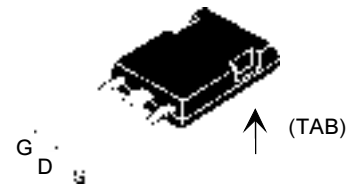
Symbol	Test Conditions	Maximum Ratings	
V_{DSS}	$T_J = 25^\circ\text{C}$ to 150°C	1000	V
V_{DGR}	$T_J = 25^\circ\text{C}$ to 150°C ; $R_{GS} = 1$ M Ω	1000	V
V_{GS}	Continuous	± 20	V
V_{GSM}	Transient	± 30	V
I_{D25}	$T_C = 25^\circ\text{C}$	14N100 14 15N100 15	A
I_{DM}	$T_C = 25^\circ\text{C}$, pulse width limited by T_{JM}	14N100 56 15N100 60	A
I_{AR}	$T_C = 25^\circ\text{C}$	14N100 14 15N100 15	A
E_{AR}	$T_C = 25^\circ\text{C}$	45	mJ
dv/dt	$I_S \leq I_{DM}$, di/dt ≤ 100 A/ μs , $V_{DD} \leq V_{DSS}$, $T_J \leq 150^\circ\text{C}$, $R_G = 2$ Ω	5	V/ns
P_D	$T_C = 25^\circ\text{C}$	360	W
T_J		-55 ... +150	$^\circ\text{C}$
T_{JM}		150	$^\circ\text{C}$
T_{stg}		-55 ... +150	$^\circ\text{C}$
T_L	1.6 mm (0.062 in.) from case for 10 s	300	$^\circ\text{C}$
M_d	Mounting torque	1.13/10	Nm/lb.in.
Weight		6	g

Symbol	Test Conditions	Characteristic Values ($T_J = 25^\circ\text{C}$, unless otherwise specified)		
		min.	typ.	max.
V_{DSS}	$V_{GS} = 0$ V, $I_D = 1$ mA	1000		V
$V_{GS(th)}$	$V_{DS} = V_{GS}$, $I_D = 4$ mA	2.5		4.5 V
I_{GSS}	$V_{GS} = \pm 20$ V $_{DC}$, $V_{DS} = 0$			± 100 nA
I_{DSS}	$V_{DS} = 0.8 \cdot V_{DSS}$, $V_{GS} = 0$ V $T_J = 25^\circ\text{C}$ $T_J = 125^\circ\text{C}$			250 μA 1 mA
$R_{DS(on)}$	$V_{GS} = 10$ V, $I_D = 0.5 \cdot I_{D25}$ Pulse test, $t \leq 300$ μs , duty cycle $d \leq 2$ %	14N100 15N100		0.75 Ω 0.70 Ω

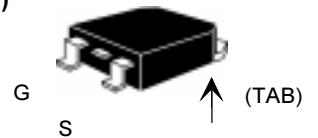
TO-247 AD
(IXFH)



PLUS 247™
(IXFX)



TO-268 (D3)
(IXFT)



Features

- International standard packages
- Low $R_{DS(on)}$ HDMOS™ process
- Rugged polysilicon gate cell structure
- Unclamped Inductive Switching (UIS) rated
- Low package inductance
- easy to drive and to protect
- Fast intrinsic Rectifier

Applications

- DC-DC converters
- Battery chargers
- Switched-mode and resonant-mode power supplies
- DC choppers
- AC motor control
- Temperature and lighting controls

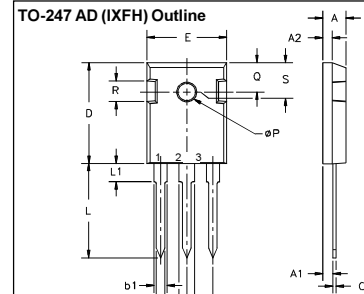
Advantages

- Easy to mount with 1 screw (TO-247) (isolated mounting screw hole) or mounting clip or spring (PLUS 247™)
- High power surface mountable package
- High power density

Symbol	Test Conditions	Characteristic Values ($T_J = 25^\circ\text{C}$, unless otherwise specified)		
		min.	typ.	max.
g_{fs}	$V_{DS} = 10\text{ V}; I_D = 0.5 \cdot I_{D25}$, pulse test	6	10	S
C_{iss}	$V_{GS} = 0\text{ V}, V_{DS} = 25\text{ V}, f = 1\text{ MHz}$		4500	pF
C_{oss}			430	pF
C_{rss}			150	pF
$t_{d(on)}$	$V_{GS} = 10\text{ V}, V_{DS} = 0.5 \cdot V_{DSS}, I_D = 0.5 \cdot I_{D25}$ $R_G = 2\ \Omega$ (External),		27	ns
t_r			30	ns
$t_{d(off)}$			120	ns
t_f			30	ns
$Q_{g(on)}$	$V_{GS} = 10\text{ V}, V_{DS} = 0.5 \cdot V_{DSS}, I_D = 0.5 \cdot I_{D25}$		220	nC
Q_{gs}			30	nC
Q_{gd}			85	nC
R_{thJC}	(TO-247 Case Style)		0.35	K/W
R_{thCK}			0.25	K/W

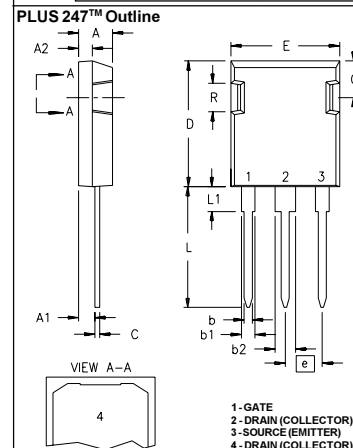
Source-Drain Diode		Characteristic Values ($T_J = 25^\circ\text{C}$, unless otherwise specified)		
Symbol	Test Conditions	min.	typ.	max.
I_S	$V_{GS} = 0\text{ V}$	14N100 15N100		14 A 15 A
I_{SM}	Repetitive; pulse width limited by T_{JM}	14N100 15N100		56 A 60 A
V_{SD}	$I_F = I_S, V_{GS} = 0\text{ V},$ Pulse test, $t \leq 300\ \mu\text{s}$, duty cycle $d \leq 2\%$			1.5 V
t_{rr}	$I_F = I_S$ $-di/dt = 100\text{ A}/\mu\text{s},$ $V_R = 100\text{ V}$	$T_J = 25^\circ\text{C}$		200 ns
Q_{RM}		$T_J = 125^\circ\text{C}$		350 ns
I_{RM}		$T_J = 25^\circ\text{C}$	1	μC
		$T_J = 125^\circ\text{C}$	2	μC
		$T_J = 25^\circ\text{C}$	10	A
		$T_J = 125^\circ\text{C}$	15	A

TO-268 Outline		DIMENSIONS			
SYM		INCHES		MILLIMETERS	
		MIN	MAX	MIN	MAX
A		.193	.201	4.90	5.10
A1		.106	.114	2.70	2.90
A2		.001	.010	0.02	0.25
b		.045	.057	1.15	1.45
b2		.075	.083	1.90	2.10
C		.016	.026	0.40	0.65
C2		.057	.063	1.45	1.60
D		.543	.551	13.80	14.00
D1		.488	.500	12.40	12.70
E		.624	.632	15.85	16.05
E1		.524	.535	13.30	13.60
e		.215 BSC		5.45 BSC	
H		.736	.752	18.70	19.10
L		.094	.106	2.40	2.70
L1		.047	.055	1.20	1.40
L2		.039	.045	1.00	1.15
L3		.010 BSC		0.25 BSC	
L4		.150	.161	3.80	4.10



Terminals: 1 - Gate 2 - Drain
3 - Source Tab - Drain

Dim.	Millimeter		Inches	
	Min.	Max.	Min.	Max.
A	4.7	5.3	.185	.209
A ₁	2.2	2.54	.087	.102
A ₂	2.2	2.6	.059	.098
b	1.0	1.4	.040	.055
b ₁	1.65	2.13	.065	.084
b ₂	2.87	3.12	.113	.123
C	.4	.8	.016	.031
D	20.80	21.46	.819	.845
E	15.75	16.26	.610	.640
e	5.20	5.72	0.205	0.225
L	19.81	20.32	.780	.800
L1		4.50		.177
ØP	3.55	3.65	.140	.144
Q	5.89	6.40	0.232	0.252
R	4.32	5.49	.170	.216
S	6.15 BSC		242 BSC	

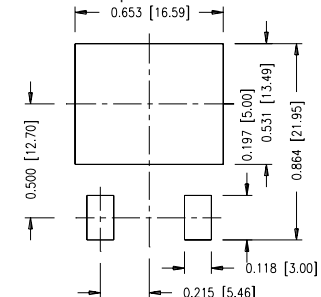


VIEW A-A
4

1-GATE
2-DRAIN (COLLECTOR)
3-SOURCE (EMITTER)
4-DRAIN (COLLECTOR)

SYM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	.190	.205	4.83	5.21
A1	.090	.100	2.29	2.54
A2	.075	.085	1.91	2.16
b	.045	.055	1.14	1.40
b1	.075	.084	1.91	2.13
b2	.115	.123	2.92	3.12
C	.024	.031	0.61	0.80
D	.819	.840	20.80	21.44
E	.620	.635	15.75	16.13
e	.215 BSC		5.45 BSC	
L	.780	.800	19.81	20.32
L1	.150	.170	3.81	4.32
L2	.260	.244	5.59	6.20
R	.170	.190	4.32	4.83

Min Recommended Footprint



IXYS reserves the right to change limits, test conditions, and dimensions.

IXYS MOSFETS and IGBTs are covered by one or more of the following U.S. patents: 4,835,592 4,881,106 5,017,508 5,049,961 5,187,117 5,486,715
4,850,072 4,931,844 5,034,796 5,063,307 5,237,481 5,381,025

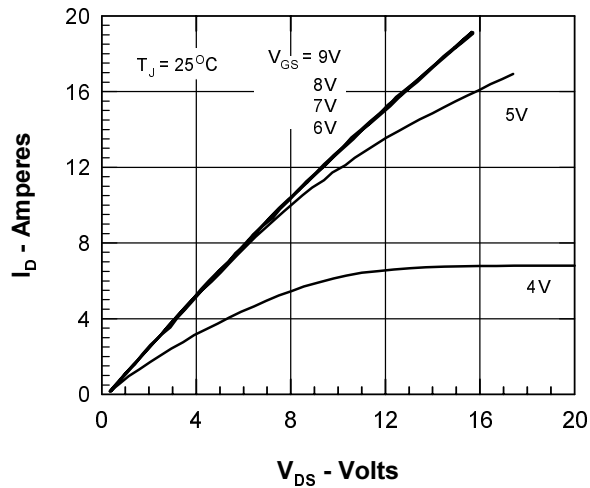


Fig.1 Output Characteristics

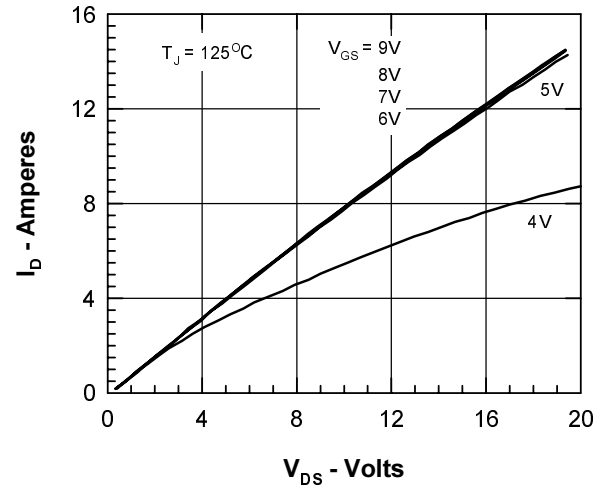


Fig.2 Output characteristics at elevated temperature

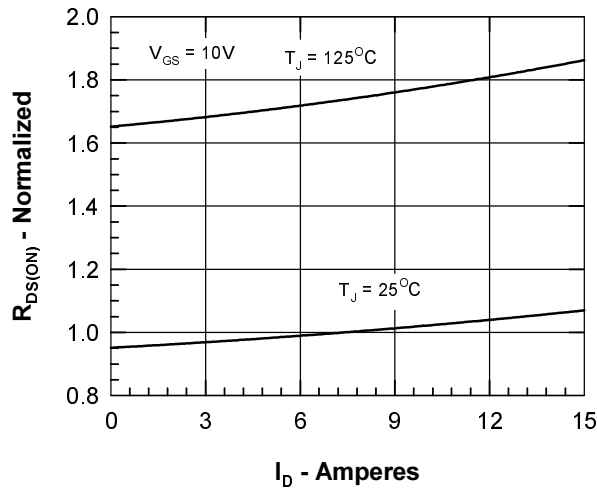


Fig.3 $R_{DS(on)}$ vs. Drain Current

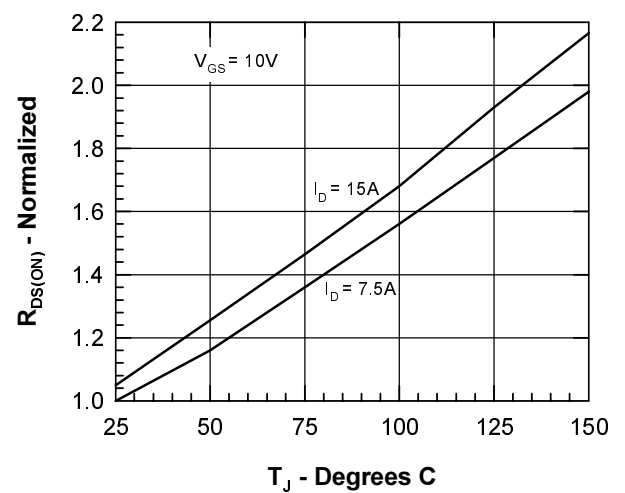


Fig.4 Temperature Dependence of Drain to Source Resistance

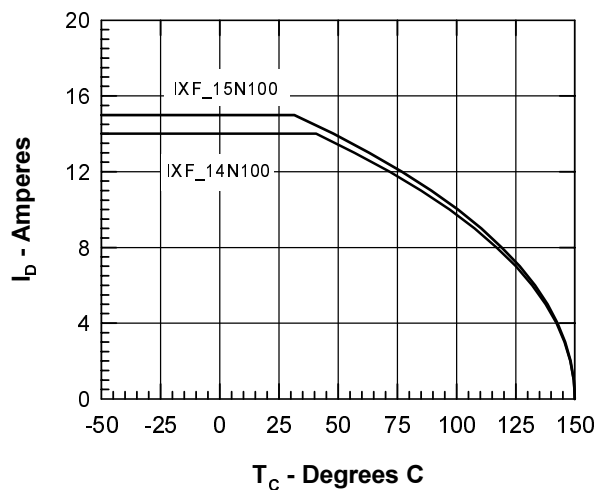


Fig.5 Drain Current vs. Case Temperature

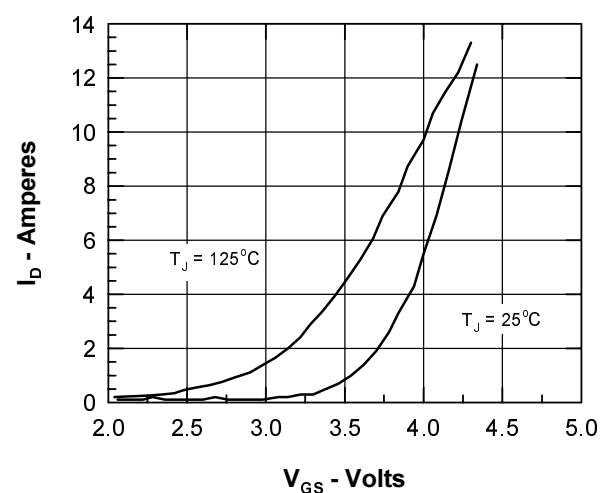


Fig.6 Input admittance

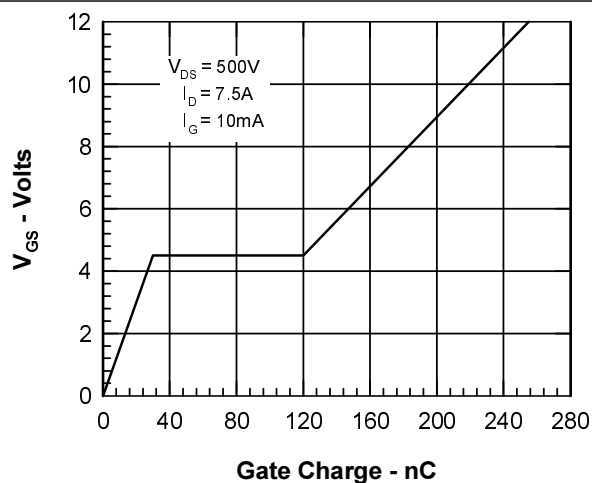


Fig.7 Gate Charge Characteristic Curve

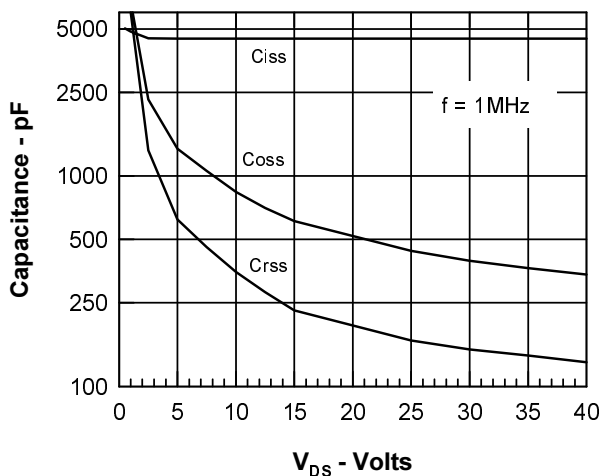


Fig.8 Capacitance Curves

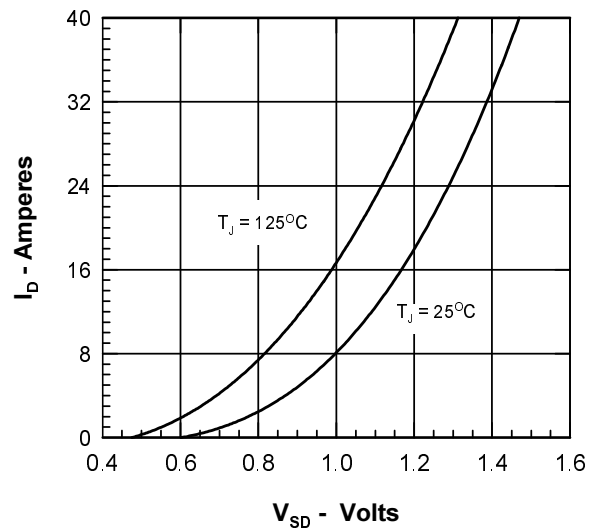


Fig.9 Source current vs Source drain voltage.

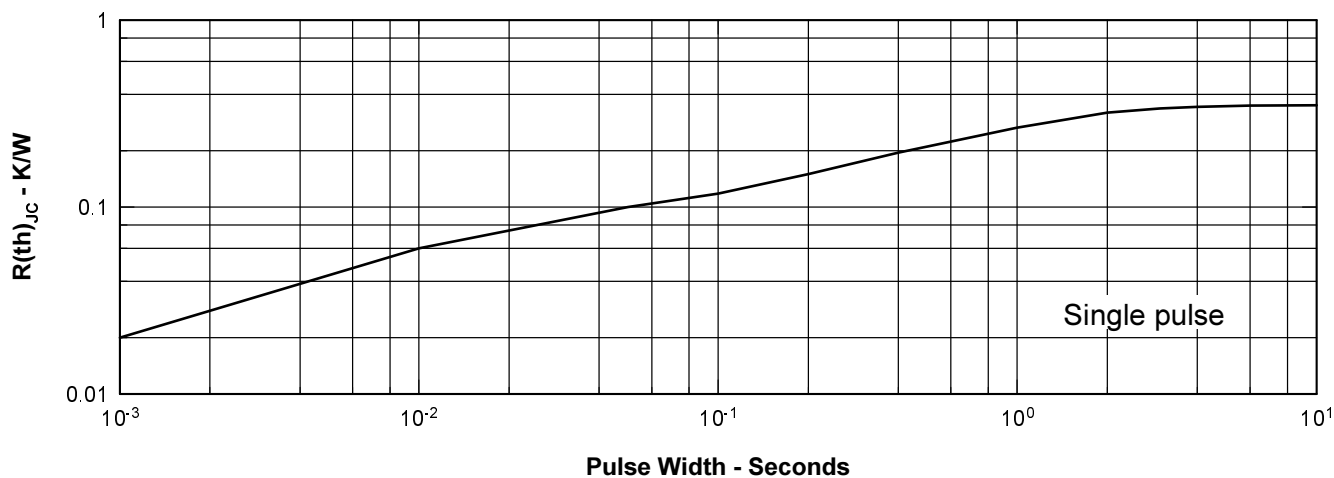


Fig.10 Transient Thermal Impedance